NOTES FROM 04.13.05 PROTON DRIVER MEETING - CIVIL

Attendees: Bill Foster, Rich Stanek, Elliott McCrory, Ken Quinn, Dan Wolff, Chris Jensen, Duane Plant, Bob Ducar, Bob Webber, Brian Chase, Maurice Ball, Dixon Bogert, Rod Walton, Lee Hammond, Gary VanZandbergen, Chuck Federowicz, Elaine McCluskey

ITEMS DISCUSSED:

Meeting focused on laying out a typical RF Station (1300MHz klystron). Dan and Chris brought drawings and information on weights and sizes of equipment. Here are the conclusions from the meeting:

1. **Klystron:**
    a. Orientation: plan on this being vertical for the 1300 MHz klystrons (may not be enough room if horizontal)
    b. Removal: would not use the roof structure and a hoist, but would have a modified forklift that would lift it from its sides. Need to be able to work around xray shielding on top.
    c. Size: Height of pulse transformer base for klystron = 35". Height req'd for lifting from base of tank to lowest roof obstruction = at most 157" (4.0m = 13.12')
    d. Weight = approx 700#; weight of klystron, solenoid, x-ray shielding = 9500#
    e. Location of waveguide penetration wrt to klystron is not certain, but probably not lined up with one another along the length of the gallery
2. **Pulse Transformer:**
    a. Actual vendor drawing for Initial installation transformer shows it to be 107.5" x 51" x 66.8" high (plus hangons vertically)
    b. Unlikely to need to replace – generally need to repair interior components in place
    c. Has oil – will likely need to contain. Oil capacity might be as much as 1000 gallons
    d. Weight = 13000 # shipping wt (no oil)
    e. Ultimate configuration transformers that would be added later are smaller – information will be provided
3. **Modulator:**
    a. From Dan's drawing for Initial installation, modulator has 3 cap bank and 3 bouncer sections. Size = 21' x 68" x 6' tall. Weight of this = 11 tons
    b. For Ultimate installation, modulator has 1 cap bank and 1 bouncer section. Size = 7' x 68" x 6' tall. Weight = 3.67 tons
    c. For Ultimate version, 2 cap banks and bouncers from the initial modulator will be moved to non-occupied sections of gallery.
    d. Not expected to have to be moved for repairs, would be unlikely to have to be replaced.
4. **DC Power Supply:**
    a. Size = 7' x 68" x 6' tall.
    b. Weight = 7 tons
    c. Might need to move for repair/replacement
    d. Has oil requiring containment – quantity unknown
    e. For Ultimate configuration, would likely relocate this supply from its location in the Initial configuration to a new spot in the same area after modulator is reconfigured
5. **Racks:**
    a. For initial configuration, need 12 total racks of 2 ft x 3 ft footprint each for the following:
        i. 3 racks for modulator controls
        ii. 1 rack for fast phase shifters
        iii. 1 rack for piezo amplifiers
        iv. 2 racks for RF
        v. 1 rack for cryo
        vi. 1 rack for beam controls
        vii. ½ rack each for vacuum & net controls
        viii. 2 spare racks
    b. Can put racks perpendicular to length of tunnel, with 6 ft in between

Also discussed utilities that would be located in the L-0 Gallery Building. Need to provide space for:

- General building cooling: heat loads not actually calculated, will especially need load from racks (Brian) and modulators (Dan). Lee was planning on fan coil in ceiling of building every 60 ft. Plan on 72 deg F as design criteria, with humidity control. With this temperature, should LCW pipes be insulated to prevent condensating?

- Sprinklers
- Water cooling for equipment: Maurice was planning on 2 large headers (S&R) for 95 deg LCW on non-aisle side of building, which may be located up in the corner on the non-aisle side of the ceiling. This would supply cooling to klystrons, transformer, modulator, but probably not for racks. Concern expressed about noise in water system by current Linac people.
- Nitrogen gas
- Compressed air
- Lighting: need to make sure there's sufficient lighting at the racks and on the non-aisle side of the equipment.
- Cables: with penetration to tunnel up high, put cable tray on wall directly below it

ITEMS FOR NEXT MEETING:

- Continue on RF station layout. Reinvite: Dan Wolff, Brian Chase, Bob Webber, Elliott McCrory, Maurice Ball, Bob Slazyk, Ken Quinn, Chris Jensen, Bob Ducar

FOR FUTURE MEETING (PERHAPS 4/27) ON DEBUNCHER BUILDING: invite John Reid & Maurice Ball.

NEXT MEETING 4/20/05 AT 9:30 A.M. IN THE conFESSional WH5NE